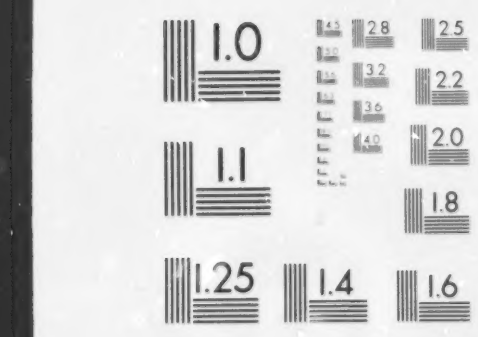

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ABSTRACT

One of a series of social studies units designed to develop the reading and writing skills of low achievers, this student activity book focuses on the theme of technology. The unit can be used for high school classes, individual study in alternative and continuing high schools, and adult education classes. Material is divided into four sections. Section one contains a reading which describes the Industrial Revolution and the growth of modern technology. Section 2 describes the age of the steam engine. Sections 3 and 4 examine the effects of industrialization on society and on the modern world. Each section contains a reading which stresses vocabulary development and aural discrimination. Appendices contain a variety of reading and writing exercises, including a story about a job interview, and stories about the Industrial Revolution and the assembly line. (LP)

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Technology Theme

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Vista Unified School District

SO015496

Theme 5 - TECHNOLOGY THEME

THE INDUSTRIAL REVOLUTION AND THE THE GROWTH OF MODERN TECHNOLOGY

A. Sounds Introduced
1. key - ey
2. little - le
3. suits - ui
4. prosecute - ute

B. Vocabulary

1.	harvest	9.	system
2.	straining	10.	specialize
3.	untapped	11.	sturdier
4.	ironic	12.	flying shuttle
5.	scarce	13.	weaving
6.	cottages	14.	sites
7.	craftsman	15.	droughts
8.	necessity	16.	migrations

Today, we all are children of the Industrial Revolution. Can you even begin to imagine what our world would be like without any machines? What would you do without the automobile or electricity? Could you exist without the "Big Mac," your T.V. and stereo?

Think of all the time that machines save you! Machines cultivate our ground and harvest our crops. They dig and lift for us. They saw, drill, and grind. They weave sew, and wash. They keep us from straining our bodies on labor that in the past broke both bodies and human spirits.

Industrialism has also given us new kinds of jobs. It provided new ways for people to rise in the world. In this way, it has made the world more open to talent and energy than it had been before. With the rise of new classes, the power of the landed aristocracies (rich landowners) has been reduced. The landed aristocracy now had to share its potential and social power with the new classes.

Where and when did the Industrial Age begin? The Industrial Revolution had its beginning in England in the 1760's. The Industrial Revolution would not have happened had it not been for the huge, untapped resources of coal and wood that were then available. What really happened during the Industrial Revolution was that people found new and better ways of getting useful work out of these energy sources and were getting it at a faster and faster rate.

It is ironic today that these once plentiful energy resources are becoming scarce. Consequently, it should be interesting to look back at a time when there was an "energy abundance".

In this theme, we are going to examine Industrialism. We will trace its early beginning up to its effect on modern man. There will be an attempt to point out both the good and bad aspects of the Industrial Revolution.

Before the Industrial Revolution, life was basically agricultural. That is to say, most people were farmers. They lived on farms or in the villages composed of small cottages. Most of the work was accomplished by manpower. Man made a product without the help of any machines. Eventually the horse came along and helped with things like hauling and plowing.

There was also another group of people known as craftsman. They produced products with their hands, such as shoes, and then sold them. Eventually, as the population of the world continued to grow, craftsman could not keep up with the demand for goods. This explosion in demand made it necessary to discover a faster way to make products. English businessmen now turned to farming families called cottagers.

It has been said that necessity is the mother of invention. The English cottage system of manufacturing was the forerunner of what would later be called the factory system. In the cottage system, a businessman would bring raw materials to the cottages of the workers who would convert them into manufactured goods. Pay was based on the goods produced. To get more money, more goods had to be produced. As a result, men, women, and children worked for long hours and received very little pay.

Eventually, some cottage families, in order to increase their production, hired members of other cottage families. Some families began to specialize in areas like weaving cloth, processing wool, or making shoes. They also began to construct larger cottages with more light. The roomy atmosphere made the work more tolerable.

As time went on, more and more inventions which changed the lives of millions of workers came about. The new inventions created a demand for sturdier metals, new machines, and more and better fuel to run the machines. These demands also caused migrations of populations and created new ways to making a living. The end result was that cottagers left their farms for factory jobs or went to work in the coal mines.

How did the factory system start and how did it differ from the cottage system? The main difference between the cottage and factory system was that more people worked under one roof in the factories. The factory system started with a series of inventions, with each new invention brought on by the need for another.

Let's illustrate that last point. In 1733, Jay Kay invented the flying shuttle, which made it possible for one worker instead of two to be able to weave cloth. This invention, however, created a need. Now the workers were creating cloth faster but running out of thread. This need prompted James Hargraves to invent a machine that spun thread eight times faster than the spinning wheel. This new machine was named the Spinning Jenny.

The one feature of these early inventions was that they required hand power. Eventually, a man named Edmund Cartwright invented a power loom for weaving. Soon other machines were invented that tapped water power and these inventions saved man from a lot of hard work.

There were some disadvantages to water power. Can you figure out what they might be? In the first place, water-powered machines had to be located near fast-flowing rivers and streams. As a result, many of the factories had to be built far away from where the people lived. The sites were also away from raw materials needed for the products.

Finally, there were problems with the water flow. Spring floods and summer droughts made power unavailable from time to time. Chunks of ice in the winter and the freezing weather sometimes froze the waterwheels for weeks at a time. It was clear then that a more dependable source of power was necessary.

THE AGE OF THE STEAM ENGINE

A. Sounds Introduced
   1. wrong - wr
   2. oil - oi
   3. nation - tion
   4. caught - au
   5. graph - ph

B. Vocabulary

1.	reliable	12.	asphalt
2.	abundant	13.	network
3.	forerunner	14.	locomotive
4.	bulky	15.	stunned
5.	fate	16.	current
6.	availability	17.	impulses
7.	impurities	18.	transmitted
8.	substance	19.	assured
9.	textile	20.	fertility
10.	alternatives	21.	rotated
11.	rutted	22.	cotton gin

Inventors had tried for years to find a reliable alternative to water power. Finally, in 1769, James Watt of England invented an efficient and dependable engine that would allow people to build factories anywhere they wanted to.

Its main source of energy was coal which was abundant and inexpensive. You have probably already guessed we are talking about the steam engine. It turned out to be a source of tremendous power.

It should be pointed out that there was a forerunner of the steam engine, called a vacuum pump, which was invented by Thomas Newcomen in 1712. Newcomen's pump included a piston, cylinder, steam and the creation of a vacuum. It had all the necessary ingredients for the practical steam engine except that it was really bulky and heavy.

This machine was used in the tin mines in England to pump out water and keep them dry enough to work in. It was probably fate then that James Watt was sent a Newcomen engine to repair. He not only repaired it, but used his skills to improve it and make it practical enough to be used anywhere. Watt's steam engine could turn wheels as well as pump water.

However, as we have already seen, one new invention, regardless how effective, usually creates a new challenge. Before the coming of the steam engine, wood was the primary fuel used to produce heat. Wood would heat water in a boiler but it took a huge amount of wood to run a factory. The heavy use of wood tended to drive up the price and also limit its availability.

Manufacturers now searched for a cheaper fuel. Their answer turned out to be coal. It had been used mainly in home fireplaces but now found its way to the factories. One problem solved. Then another one popped up. The pressure in the steam engine made it necessary to find a way to make a stronger metal.

Iron seemed to be the answer but the process for making it was very slow. Because of the need for iron and a faster way to produce it, men began to experiment. It was soon discovered that coal could be baked, forcing out the impurities and leaving a substance known as coke.

Coke could now generate the heat needed to smelt iron ore in a fast and efficient process. Large quantities of iron could be smelted in this manner and then more and more industries which needed a stronger metal came into existance.

It should be getting clear that the Industrial Revolution was really a series of revolutions, each one leading to another. The first was based on the application of steam (with coal as the source of power) to the textile industries, the iron industry and the railroads.

The second was based on steel; the third was based on electricity (with oil as a source of power). Today, it is obvious that we are considering new energy alternatives such as atomic and solar energy since our fossil fuel (coal and oil) sources are dwindling.

The invention of the steam engine and other new ideas created a demand for better means of transportation. Machines were turning out products faster than ever before, but getting them to the market-place was still very slow.

Roads were simply rutted trails which became muddy creeks during the rainy season. Packhorses and stage coaches were the main types of transportation during the early days of the age of the machine. With good luck and weather, goods could be transported a whooping 50 miles! Needless to say, something had to be done to improve this situation.

The first area to be improved were the trails called roads. A Scot named John McAdam experimented with a new way to make roads. He started with a roadbed of large stones then topped these with smaller stones. These macadamized roads held up to the weather and are still used today in parts of the world where asphalt is not available.

Another improvement in transportation came with the expansion of the network of canals. People now began to use locks to regulate the level and flow of water. Can you think of any famous canals in the United States?

It was not long before the canals were given a lot of competition from the "iron horse". An English engineer, George Stephenson, perfected a moving engine called a locomotive that moved itself on iron tracks and was powered by steam.

In 1829, Stephenson stunned observers by using a steam engine to pull a line of railroad cars at the incredible speed of 29 miles per hour! What an improvement over the days of the horse and carriage. Soon countries of the world were criss-crossed with railroad tracks.

The demand for a stronger railroad track also led to a method of making steel, a stronger metal than iron, known as the Bessemer process. Railroad cars or coaches were made more comfortable and safer air brakes were invented.

The concept of the steam engine was also applied to ships. In 1807, an American, Robert Fulton, started the first steamboat service. His first steamship was called the "Clermont". Twenty years later, a steamship called the "Great Western" crossed the Atlantic in fifteen days.

It was about this time that scientists began to experiment with sending messages using electric current. Samual Morse of the United States sent electrical impulses over a wire which made a machine click. As you probably know, Morse worked out a series of dots and dashes called the Morse Code. Now messages could be transmitted over hundreds of miles in a few seconds.

How did all these inventions affect the farmer? At first glance it would appear that things like steam engines, railroads and steamships would do much to help him. However, the farmer did begin to experiment in an effort to improve his crops and lifestyle.

An early improvement was made by Jethro Tull, who invented a "seed drill". The seed drill stopped much of the waste of seeding by hand and it also assured more seeds of actually taking root.

The farmers experimented with soil fertility and found that you could plant your land each year as long as you rotated your crops. Crop rotation became a basic principle of modern farming.

It was not long before iron and steel plows replaced wooden ones. As metal became more available and cheaper, farm machines were invented. A good example was the McCormick reaper, invented by Cyrus McCormick. It could harvest crops and do the work of many men. If a farmer could afford to buy one of these machines, he could plant many more acres of crops.

Another example of a very important farm invention was the cotton gin, invented by Eli Whitney in 1793. This machine picked the little seeds out of the cotton balls. Now cotton planters could produce much more crop without increasing their manpower. The southern part of the United States would really be affected by the cotton gin.

THE EFFECTS OF INDUSTRIALIZATION ON SOCIETY

A. Sounds Introduced
   1. error - err
   2. weigh - eigh
   3. believe - eve
   4. ambition - amb

B. Vocabulary
   1. clustered
   2. proletariats
   3. managerial
   4. trudge
   5. compensation
   6. tenements
   7. horrible
   8. promote
   9. lathe
   10. telephone
   11. electricity
   12. isolated
   13. previous
   14. corporations
   15. stockholders
   16. regulation
   17. twentieth

What effects did the growth of industry have on society? One obvious effect was that people moved from the farm to the cities. In the cities, people tried to live as close to the factories as possible.

As a result, the small houses became clustered very close together and planted the seeds for future slums. A good illustration of the growth of cities was Manchester, England, which grew from 25,000 to 455,000 in the decade of the 1850's.

The Industrial Revolution also established new social classes. There were still the very wealthy who owned the factories and large amounts of land. But the factory system gave rise to a new managerial group who were not really laborers or owners. The rest of the workers fell into the class of proletariats or hired hands.

Both skilled and unskilled labor fell into this last category. It was very difficult for a person to move himself up in society to the managerial class.

The life of the average person during the Industrial Revolution was pretty gloomy. Hours of work were long and the working conditions were very poor. Often an entire family, man, woman, and children would trudge off to the factory in the morning.

The average weekly wage in 1867 was $7 per week! In addition, the factories offered no vacations or compensation for their employees if they were hurt on the job or got sick. This rough life affected nearly everyone. Children as young as five years old were working 12 hour days. If they fell asleep, they were beaten.

Eventually, (during the 1800's) some reforms were made to help the working class of people. Their wages were increased some and the tenements in which they lived were improved. Child labor laws were passed to protect the young children and women. Some countries began to limit the number of hours, especially women, could work a day.

By the 1840's, union movements were starting in England. A union was designed to organize workers to help them press for more improvements. Finally, authors like Charles Dickens, in his book Hard Times, wrote about the horrible living and working conditions in society. This book opened many upper class person's eyes to the conditions and also served as a rallying point for the working class.

A good portion of the inventions that we have discussed up to this point were developed from 1700 to 1800. You may have already wondered about some other important developments such as electricity and the internal combustion engine which we have failed to mention.

The invention of the steam engine helped to promote the first industrial revolution. Steam engines ran machines. This led to a great increase in production. We have also seen it lead to many other inventions which brought many changes to the people's lives.

The second Industrial Revolution occurred during the second half of the 1800's. It brought even greater changes and centered in the United States. The second Industrial Revolution was made possible by the use of electric energy to run machines. Some important developments during this time were the following:

1. New ways of making steel were developed.
2. The machine tool industry was developed. Lathes and other new machines made possible the mass production of goods.
3. The telephone and light bulb were invented. They converted electricity into sound and light.
4. The internal combustion engine was invented. This is the same kind of engine used in your car. It is also found in trucks, ships, and airplanes. The internal combustion engines made it possible for people to travel great distances in a short period of time.

Electricity and the internal combustion engine really revolutionized man's world. Goods and ideas could travel to far corners of the world. Trade and business greatly increased. Places that had been isolated suddenly found themselves in contact with Europeans and Americans.

Between 1860 and 1900, the United States became the number one industrial power in the world. The Civil War, which started in 1861, was a big stimulus for this fast industrial growth.

Both the North and South had to produce arms, food, clothing, and other goods necessary to fight the war. The South, not having an industrial base in the first place, was unable to supply its troops adequately. The lack of materials and supplies in the South was a major reason for their defeat.

After the Civil War, American and world businesses expanded to many times their previous size. It became very difficult for a person or a partnership to own or buy a big business. As a result, small business gave way to something called corporations.

Corporations are made up of many stockholders. Each person buys stock in the business and in effect becomes part owner. This method of organizing a business allows huge sums of money to be raised. A board of directors is elected and they make the important decisions for the company. In some cases, these huge corporations were able to gain control of entire industries, forming what is known as a monopoly. For example, Standard Oil Company started in 1870. By 1879, it controlled about 90 percent of the country's oil refining business.

As the power of these corporations grew, the people began to ask for some government regulation. The owners and stockholders argued that the government should continue to practice the Laissez-Faire (let it alone), "hands off," policy. They asked, "What is wrong with free competition?"

Eventually, the government did step in and pass laws which protected people from unfair industrial practices. But, like today, big businesses always seemed to find loop holes. So as the world headed toward the twentieth century, it was already clear that new and bigger after-shocks of the Industrial Revolution would rock the societies of our land.

THE IMPACT OF THE INDUSTRIAL REVOLUTION ON THE MODERN WORLD

A. Sounds Introduced
   1. curious - ious
   2. question - que
   3. love - ove
   4. fair - air

B. Vocabulary
   1. dominated
   2. shamed
   3. trace
   4. surrendered
   5. stunned
   6. disbelief
   7. artificial
   8. prestige
   9. bruised
   10. limitation
   11. sophisticated
   12. supplements
   13. demographic
   14. frontiers
   15. thermostat

As the twentieth century (1900's) rolled into gear the Industrial Revolution continued to affect people in all walks of life. One of the biggest changes came with the role of women.

For hundreds of years, it was assumed that the place for women was in the home with their families. It was also automatically believed that a good woman should get married and raise a family.

Well, the Industrial Revolution began to alter this idea. Now women began to leave the house each morning, just like their husbands, to report to work. Slowly but surely, women began to demand more respect and rights.

After many rallies and a lot of hard work, women earned the right to vote in the United States in 1919. They also fought for equal treatment with male employees. They wanted to be paid the same amount of money as the male when they were doing the same work.

Today women in many parts of the world, especially in the United States, have come into their own. The "Women's Liberation" movement is worldwide. The day of the woman taking a back seat in a male-dominated world is over!

In 1979, 60 percent of the female population in the United States held jobs. The number of women entering the labor force was rising faster than the number of men. Between 1963 and 1973, the number of working women rose by 40 percent, while the number of working men was rising by only 15 percent.

In the past, a wife who worked did not fit into the role expected of her. If she "liked" to work, she was considered an "unnatural" wife and mother who did not want to be at home. She shamed her husband if she had to work by implying that he was not a "good provider". However, these attitudes have changed in many parts of the world.

In France, about 60 percent of the working women are married. In the United States, the average employed female is past 40 years of age; two out of five are mothers and 10 percent of them have children six years old or younger.

It is clear then that women must no longer stay home to tend the children and cook while the man goes out to earn a living. Today, both man and woman, husband and wife, share equal parts in the economic life of society.

One of the areas affected by industrialization that we have not yet discussed is that of warfare. Think of all the military weapons and inventions that have been produced in the last fifty years. The list would range from high powered rifles, to tanks, submarines, battleships, missiles, and on and on.

All these inventions trace their beginnings back to the ideas of the Industrial Revolution. A deadly and frightening by-product of industrialization was the atom bomb. It was worked on secretly by scientists for many years. The scientists finally tested it and informed the President of the United States that it was ready to be used. At the time, we were fighting World War II. Germany had surrendered. It was 1945 and President Truman's advisors told him that it would take much more fighting and dying before the Japanese would surrender.

As a result, Truman informed the leader of Japan that the United States had a very dangerous weapon that we would use on them unless they surrender immediately. The Japanese did not act. Pamphlets were dropped warning the Japanese people that a horrible bomb would be dropped.

On August 6, 1945, the Atomic Bomb was dropped on Hiroshima. Thousands of people were killed. The Japanese emperor still refused to surrender. Three days later, August 9, another A-Bomb was dropped on a city called Nagasaki. At this point, the Japanese surrendered. The rest of the world watched these events in stunned disbelief.

What had man created? After World War II was over, attempts to limit the production of atom bombs began. As more countries discovered the secret of the A-Bomb, the more difficult it became to reach any agreement on control procedures.

Atomic energy, can, however, be used in very "peaceful" ways. Atomic energy has been used to generate power in the form of electricity. It has also been successful in supplying power to ships and submarines. Medical experts are experimenting with "atomic medicine".

However, it should be made clear that atomic energy always carries risks. It leaves behind what is known as radioactive waste. This waste can be very harmful to humans. It still remains a problem today to figure out how to adequately protect ourselves from radioactive waste.

Another modern day side effect of the Industrial Revolution is our rocket and missile development, and space exploration. You may have already read that the so called "Space Age" officially began in 1957 when the Soviet Union sent its first artificial satellite, Sputnik I, into orbit around earth.

The United States, their pride and prestige somewhat bruised, quickly caught up with the Russians. The climax of the United States' advances in space came on July 20, 1969, when American astronauts, Neil Armstrong and Edwin Aldrin stepped from their spacecraft, Apollo II, and touched the surface of the moon. The world was really surprised.

Some people still find it difficult to believe that humans have actually walked on the moon. In 1973, the United States launched a large space vehicle called the "Skylab" This spacecraft remained in orbit and sent all kinds of information back to earth. It just recently fell back to earth.

Finally, we should not fail to mention a last recent development known as nuclear power. Nuclear power plants run huge generating plants today. Nuclear power is also being used in the area of medicine.

It has tremendous potential for the good of the world. But it could also be the curse of the world. Thermo nuclear weapons are hundreds of times more powerful than atomic arms. A thermo nuclear war could destroy the entire world.

In a way, this fact of total destruction looming through nuclear power, has caused many people in our society to "live each day at a time". Why make plans for the future when it may not come? The countries of the world are presently working on arms limitation talks to reduce the threat of nuclear warfare.

Nuclear power also poses the problems of radioactive waste. We have already seen from the Energy Theme that nuclear power plants build up a tremendous amount of waste. It can only be hoped that with all our industrial technology, we will be able to "control" the power and the products that we have produced.

It is very hard to predict the future. But one thing is certain. Man will continue to experience change at a tremendous rate. Machines will dominate our lives more than they do right now. Computers may be as common in homes a few years from now as television is at the present.

Imagine your alarm going off and your curtains silently opening, and the thermostat automatically turning on the heat in your home. A robot or a clone would have your breakfast prepared for you. A push of a button would inform you of national and local weather conditions. Another button would inform you of traffic conditions.

Your computers would be tied into stores and offices so that you could order food and supplies from your living room couch. You might even have a computer to tutor you on subjects you are having difficulty with in school.

It is very possible that the home may be the center of society as it was before the Industrial Revolution. It is also very likely that new and more sophisticated machines will be used in agriculture.

The "green revolution" of improving the food production around the world will continue. However, it is also possible that in the next few years, we may begin using food supplements.

These supplements would supply us with the vitamins necessary in our diet. But the supplements would be in the form of pills. For example, you might take three orange pills for breakfast, two yellow ones for lunch, and four blue ones for dinner. Does this sound appetizing to you?

Man will also use machines and technology to find new places to live. As the world becomes more and more populated, demographic experts are beginning to wonder where we are going to put all the people. It is a fact that man has two remaining frontiers; space and the oceans. We have already mentioned some of the gains we have made in the area of spaceship development and exploration.

In addition, scientists have created machines which probe the deep floor of the ocean giving us more clues to our understanding of the seas. Scientists are experimenting now with implanting gills in rats to enable them to live under water.

Their idea is that man may have to live underwater sometimes in subterranean cities. Would it be possible to put a gill device in man so that he could breathe and live underwater? It sounds unbelievable, but so did the idea of man walking on the moon!

So we have seen how man has gone from water-powered machines to space age missiles and computers in a short couple hundred of years. In many ways, life has become easier with all the machines to help us do the work.

We have become a "push-button, throw-away" society. But industry has also brought problems of unemployment, pollution, and deadly weapons and bombs. Hopefully, knowing what has gone before us will help us understand what happens next better.

APPENDIX READINGS
WITH QUESTIONS & EXERCISES

How to Succeed By Really Trying (The Contract)

A. Vocabulary
1. consent
2. procure
3. interchangeably

That John Goederson, now aged fourteen years, eight months, and twenty-seven days, by and with the consent of his step-father, John Wright, and his mother, Mary Wright, hath...of his own free will and accord, put himself Apprentice to Frederick Seely of the city of New York, Cordwainer...to ...serve until the full end and term of six years, three months and three days next ensuing during all of which time the said Apprentice where readily obeyed...He shall not contract matrimony within the said term; at Cards, Dice, or any other unlawful game shall he not play...He shall not absent himself, day or night, from his Master's service without leave, nor haunt ale-houses, taverns or playhouses; but in all things behave as a faithful apprentice ought to do... And the said Master shall use the utmost of his endeavors to teach, or cause to be taught or instructed the said Apprentice in the trade, or mystery, of a Cordwainer, and procure and provide for him sufficient meat, drink, washing, lodging and clothing fit for an Apprentice during the said term of service and four quarters of night schooling during the said term. In WITNESS WHEREOF the said parties have interchangeably set their hands and seals hereunto.

Dated the sixth day of August, in the thirty-fifth year of the Independence of the United States of America, and in the year of our Lord eighteen hundred and eleven.

Frederick J. Allen, The Shoe Industry, 1916
pp. 31-32

26

Technology Theme - **Questions**
Reading #1

Answer each question in a complete sentence.

1. What was the purpose of the contract?

2. According to the contract, what did the Master provide?

3. Suppose I were to say that under this contract the Master and the Apprentice were exchanging energy for energy - would I be right? Explain.

4. Do you think the contract gave John a fair deal? Why?

The Job

A. Vocabulary

1. aisles
2. recognize
3. inquired
4. interrupted
5. occupied
6. promptly
7. adjustable
8. circular
9. eagerly
10. incessantly
11. mechanical
12. fumbling
13. venture
14. ache
15. weary
16. nauseating
17. modifying
18. encountered
19. littered
20. subdued

It was with weak knees and a slight catch in her breathing that she came up to the great shoe company at Adams and Fifth Avenue and entered the elevator. When she stepped out on the fourth floor there was no one at hand, only great aisles of boxes piled to the ceiling. She stood, very much frightened, awaiting someone.

Presently Mr. Brown came up. He did not seem to recognize her.

"What is it you want?" He inquired.

Carrie's heart sank. "You said I should come in this morning to see about work-"

"Oh," he interrupted. "Um - Yes. What is your name?"

"Carrie Meeber."

"Yes," he said. "You come with me."

He led the way through dark, box-lined aisles which had the smell of new shoes, until they came to an iron door which opened into the factory proper. There was a large low-ceilinged room with clacking, rattling machines at which men in white shirt sleeves and blue aprons were working. She followed him through the clattering machines, keeping her eyes straight before her, and flushing slightly. They crossed to a far corner and took an elevator to the sixth floor. Out of the assortment of machines and benches, Mr. Brown signalled a foreman.

"This is the girl," he said, and turning to Carrie, "you go with him." He then returned, and Carrie followed her new superior to a little desk in a little corner, which he used as a kind of official center.

"You've never worked at anything like this before, have you?" he questioned rather sternly.

"No, sir," she answered.

He seemed rather annoyed at having to bother with such help, but put down her name and then led her across where a line of girls occupied stools in front of clacking machines. On the shoulder of one of the girls who was punching eye holes in one piece of the upper, by the aid of the machine, he put his hand.

"You," he said, "show the girl how to do what you're doing. When you get through come to me."

The girl addressed rose promptly and gave Carrie her place.

"It isn't hard to do," she said, bending over. "You just take this like so, fasten it with this clamp, and start the machine.

She suited action to word, fastened the piece of leather, which was eventually to form the right half of the upper of a man's shoe, by little adjustable clamps, and pushed a small steel rod at the side of the machine. The machine jumped to the task of punching, with sharp snapping clicks, cutting round bits of leather out of the upper, leaving holes which were to hold the laces. After observing a few times, the girl let Carrie work it alone. Seeing that it was fairly well done, she went away.

The pieces of leather came from the girl at the machine to her right, and were passed on to the girl at her left. Carrie saw at once that an average speed was necessary or the work would pile up on her and all those below would be delayed. She had no time to look about, and bent anxiously to her task. The girls at her left and right realized her situation and, in a way, tried to aid her, as much as they dared, by working slower.

At this task she labored incessantly for sometime, finding relief for her own nervous fears in the humdrum, mechanical movement of the machine. She felt, as the minutes passed, that the room was not very light. It had a thick odor of fresh leather, but that did not worry her. She felt the eyes of the others upon her and feared she was not working fast enough.

Once, when she was fumbling at the little clamp, having made a slight error in setting in the leather, a great hand appeared before her eyes and fastened the clamp for her. It was the foreman. Her heart thumped so that she could scarcely see to go on.

"Start your machine," he said, "start your machine. Don't keep the line waiting."

This recovered her sufficiently and she went excitedly on, hardly breathing until the shadow moved away from behind her. Then she breathed a great breath.

As the morning wore on the room became hotter. She felt the need of a breath of fresh air and a drink of water, but she did not venture to stir. The stool she sat on was without a back or footrest, and she began to feel uncomfortable. She found, after a time, that her back was beginning to ache. She twisted and turned from one position to another slightly different, but it did not ease her for long. She was beginning to tire.

"Stand up, why don't you?" said the girl at her right, without any form of introduction. "They won't care."
Carrie looked at her gratefully. "I guess I will," she said.

She stood up from her stool and worked that way for a while, but it was a more difficult position. Her neck and shoulders ached in bending over...

Carrie at last could scarcely sit still. Her legs began to tire and she wanted to get up and stretch. Would noon never come? It seemed as if she had worked an entire day. She was not hungry at all, but weak, and her eyes were tired, straining at the one point where the eye-punch came down... The halves of the uppers came piling down steadily. Her hands began to ache at the wrists and then in the fingers, and towards the last she seemed one mass of dull, complaining muscles, fixed in a permanent position and performing a single mechanical movement which became more and more distasteful, until at last it was absolutely nauseating.

When she was wondering whether the strain would ever cease, a dull sounding bell clanged somewhere down an elevator shaft, and the end came. In an instant, there was a buzz of action and conversation. All the girls instantly left their stools and hurried away in an adjoining room. Men passed through, coming from some department that opened on the right.

The whirling wheels began to sing in a steadily, modifying key, until at last they died away in a low buzz. There was silence, in which the common voice sounded strange.

Carrie got up and looked for her lunch box. She was stiff, a little dizzy, and very thirsty. On the way to the small space portioned off by wood, where all the wraps and lunches were kept, she encountered the foreman, who stared at her hard.

"Well," he said, "did you get along all right?"

"I think so," she replied very respectfully.

"Um," he replied, for want of something better, and walked on...

The place smelled of the oil of the machine and the new leather--a combination which, added to the stale odors of the building, was not pleasant even in cold weather.

The floor, though regularly swept every evening, presented a littered surface. Not the slightest provision had been made for the comfort of the employees, the idea being that something was gained by giving them as little and making the work as hard as possible...The washrooms were disagreeable, crude, and foul places.

By three o'clock she was sure that it must be six, and by four it seemed that they had forgotten to note the hour and were letting all work overtime. The foreman became overbearing, prowling constantly about, keeping her tied down to her miserable task...When six o'clock came, she hurried eagerly away, her arms and her limbs stiff from sitting in one position...

Carrie turned her face to the West with a weak heart. As she turned the corner, she saw through the great shiny window the small desk at which she had applied. There were crowds, hurrying with the same buzz and energy-yielding enthusiasm. She felt a slight relief, but it was only at her escape.

Questions

Answer each question with a complete sentence.

1. How did Carrie's fellow workers cooperate in helping her when she was in need?

2. List several examples of the unappealing working conditions in the shoe factory.

3. There was a very long sentence in the story that described the repetitive work of the assembly line quite well. Reading aloud the sentence makes the reader feel the ache that comes with performing a single mechanical movement. Find the sentence and write it down.

4. The end of the story tells you something about Carrie's feelings about her job. Summarize her feelings in one sentence.

5. How is Carrie's work more of a job while John Goederson who signed a 6 year contract, has a career to look forward to? What is the difference?

The Steam Engine

We saw how the English and French revolutions changed people's views about government. People were not willing to be ruled by kings who were born to power. They began to believe in themselves. They felt that they should select their own rulers. But these new rulers would stay in power only as long as the people wanted them. And life would be freer for all people. Each person was as good as any other.

In the 18th century another revolution got underway. It too made great changes in the way people worked and lived. The Industrial Revolution, which began in England, and spread to many other countries. Today, it is still spreading and changing. It is not a revolution of battles or wars, of land or nations. It is a revolution of how and where things and goods are made.

At the beginning of the 18th century, England was a nation of farmers. Only one person out of every four lived in cities. Products such as cloth were made in the farmers' cottages. The entire family took part in manufacturing. The wife and children combed and spun the wool or cotton. The husband did the weaving. (The spinning wheel and hand loom had been used for centuries.) This work-at-home production was called the domestic system.

By the end of the 18th century, farm families were no longer spinning and weaving in their homes. Cloth was made in factories by machines. But there was still a problem: where to find the power to run the machines. The answer was found in James Watt's steam engine.

In this story James Watt writes a letter to a person who does not understand what steam power can do. Ask yourself whether Watt had good reason for being angry. Was the Industrial Revolution possible without the steam engine?

Dear George,

I have heard that you are telling people that England could have existed without James Watt. "What did he do? He was no inventor. He built a steam engine, but anybody can build a steam engine. What was wrong with Newcomen's steam engine? If puffed; it had lots of power. All Watt did was copy Newcomen."

George, let's be honest. I never said that I alone invented the steam engine. You know as well as I do that the ancient Greeks made a steam engine. But it was a toy; it could not make a machine run. Yes, Tom Newcomen made an engine many years before I did - and, by God, it worked! But all it could do was pump water out of the mines. That's where I did my part. I took Tom's engine and made change after change! No matter what you think, it wasn't easy. I worked on the steam engine until it had the power to drive the machines in the factories. I used coal to power the steam engine. And you know how rich England is in coal! We have enough coal to power millions of machines.

What did I do for England, George? I made it possible to use steam. I gave factories the power they needed to make cloth and iron and steel. Yes, I made it easier and cheaper to run the coal and copper mines. Do you remember what it was like when factories used the rushing waters of a river or a pond to drive the machines? What did you do when there wasn't enough water? What happened when there was no rain? Did you bring your own buckets of water when the wheels would not turn?

Perhaps you would like to go back to the old days. Pitch up your horses and let them turn the power wheel. Find out what it means to depend on horses. How much cloth do you think the machines run with horsepower can produce?

You simply do not understand that steam is always there. You never have to worry whether there is enough water. You don't have to build your factory near water. It never gets hungry. Do you know that my engine has the power of 20 horses? In fact, I have even made a few engines with the power of 80 horses! Imagine having 80 horses indoors for each of my engines! Can you see what this means?

My engine never sleeps. It makes those factory wheels turn faster and faster. Each turn of the wheel means more goods and cheaper prices for the buyers. It means more money for all of us. England's wealth is greatly increased. And don't forget the jobs the engine creates for all the workers in the new factories!

Yes, George, England could have lived without a James Watt. But could we have had an Industrial Revolution without my steam engine? Some day, you'll see. They will call my steam engine the greatest invention of all time.

Your friend,
James Watt

Exercise A

Write a T for each statement that is true and O for each statement that is an opinion.

1. James Watt was the greatest inventor of all time. _____
2. The Industrial Revolution is still spreading and changing. _____
3. The Industrial Revolution is a revolution of how and where things are made.
4. Products made in factories are much better than those made in people's homes. _____
5. At the beginning of the 18th century in England, the entire family took part in making goods. _____
6. Watt's steam engine used coal. _____
7. Watt's steam engine helped increase the production of clothing, iron, and steel. _____
8. Steam power is the best kind of power. _____

Exercise B

Which statements show how the Industrial Revolution changed the lives of the English people?

1. Most cloth was now made in factories.
2. The spinning wheel and hand loom were widely used.
3. Steam power rather than water power turned England's machines.
4. Horses turned the power wheels in England's new factories.
5. Factory owners made higher profits.
6. Prices of factory-made goods were always higher than prices of home-made goods.
7. There were many new jobs for workers in the factories.

The Steam Engine **Exercise C**

Answer the following question using complete sentences.

Imagine that James Watt did not develop the steam engine. Neither did anyone else. Imagine too that the Industrial Revolution never took place. Write a short paragraph telling how different your life would be if there had never been an Industrial Revolution. List some of the items you use every day that were made possible by the Industrial Revolution.

The Internal Combustion Engine

A. Vocabulary
   1. combustion
   2. hoisting
   3. precisely
   4. verified

The story of the internal combustion engine - the driving force of the automobile - begins with a big bang and ends with a purr.

The big bang came from the first internal-combustion engine - the cannon. The purr comes from the latest sports car motor throbbing at thousands of revolutions per minute.

Under that flashy hood is an engine that works simply. Air and fuel are mixed, then ignited. The combustion creates hot gases that rapidly expand and push pistons, that turn the wheels, that move the car forward.

What makes a car's wheel go 'round and round' are repeated ignitions of the air and fuel mixture that push the pistons back and forth.

But that's putting the car before the cannon. Although it was a successful war machine, the cannon did not adapt to peaceful work; every time it was fired, it lost its piston.

For a long time, inventors were puzzled. For successful internal combustion, the correct amount of fuel and air had to be ignited at precisely the right moment.

Attention turned to internal combustion engines, such as the steam engine. But when steam engines got low on water, they had a tendacy to blow up.

The next breakthrough came when inventors learned how to use illuminating gas and petroleum products as fuels. In 1860, Etienne Lenoir built an internal combustion engine that worked well enough to put on the market. Unfortunately, Lenoir's engine was noisy and inefficient.

The first American to develop an internal combustion engine was George Brayton in 1873. He mixed and compressed the air and fuel in a separate cylinder. In the end, the Brayton engine was also not efficient enough to compete against the steam engine. Only a few thousand were sold.

While Brayton was building his engine in America, Nikolaus Otto and Eugene Langen were perfecting an internal combustion engine in Germany. It looked a little like a vertical cannon. It featured a free piston that rose and fell, creating thrust or forward motion

Although funny-looking, the engine worked quite well - though not in automobiles. It was mainly used for hoisting in warehouses. Several thousand were sold over the next ten years. But Otto, dissatisfied, kept trying to build a better engine. Like other inventors since the time of the cannon, he sought a controlled, safe explosion.

One day he was watching smoke drift lazily from a factory chimney - and had a thought. If he could mix air and fuel in an engine the way the factory smoke was mixing with the atmosphere, he might be able to create a smooth and safe explosion.

He succeeded, improving upon the work of Lenoir and Brayton. Otto also developed the idea of using a four-stroke cycle to mix the fuel and air, run the engine, and dispose of the exhaust. This famous Otto four-stroke engine, first built in 1876, remains unchanged in principle in today's automobile engine.

And those engines, after all, are still closely related to that early cannon - a fact easily verified by listening to an automobile backfire.

Reading # 4 - Internal Combustion Engine

Questions

Answer each question with a complete sentence.

1. Why has the internal combustion engine remained basically unchanged in principle for nearly a hundred years? Is it time to "reinvent" a new, more fuel efficient engine?

2. Should cities seriously consider trolleys? Why or why not?

3. Name two people who were early inventors or experimenters with the internal combustion engine.

Farm or Factory?

A. Vocabulary
   1. domestic
   2. flocked
   3. epidemics

As you have seen, before the Industrial Revolution, people made goods at home. This was called the domestic system. Then the scene shifted to factories with machines. Farm people flocked to the factories in the towns and cities. No special skills were necessary to work in those factories. The workers repeated the same operations over and over, thousands of times each day. The machines did the thinking and planning for them.

Factory workers in cities often lived in filthy rooms in overcrowded slums. They worked in dark, airless factory rooms where they were in constant danger from the unguarded machinery. They worked as long as there was light. Often they could barely see what they were doing. The pay was low, but it was more than they could earn on the farm. Many of the workers in these factories (and even in the mines) were women and children.

In this story a young girl of 14 returns to her family home on an English farm. Ask yourself whether she should stay on the farm. Did she make the right decision? What would her life have been like if she had stayed on the farm?

"Susan, welcome back from Manchester," said Joyce. "It's great to see you again. Are you going to stay home with us for a few months?"

"I'm glad to see you, too," said Susan. "It's been such a long time since I left home. No, I'm just visiting for a short time. I am not going to stay here."

"Why not?" asked Joyce. "You look terrible. You're as skinny as a stick. Your clothes hang on you as though you're a scarecrow!"

"Stop it, Joyce," said Susan angrily. "You don't look so great yourself, but you don't hear me talking about how ugly you are. I've been sick for the past few weeks. How do you expect me to look?"

"Please don't be angry, Susan. I just want you to be well and look healthy. Stay with us for a few weeks, and you'll be yourself again."

"I am myself. This is the real me," answered Susan quickly. "I have no intention of staying for more than a few weeks. I never want to feel the way I felt when I lived here on the farm. My mind was a blank. My life was empty. I was so lonely and sad. All that I had to look forward to were the endless days and nights on the farm. There were chores to be done from before sunrise to after sunset. Chores and more chores every day - 365 days a year. There was no end to my work. And I was so bored!"

"It may be lonely here," said Joyce quietly. "Yes, you may do the same things all during the year on the farm. But the farm isn't at all like a factory. You don't repeat the same movements minute after minute, hour after hour, day after day. Talk about being bored!"

"Joyce, you just don't understand," said Susan. "The thing that's so great about factory work is that it is not boring for me. I like it!"

"We have different ideas about boredom," laughed Joyce. "Let's forget about being bored, if we can. Look around you. It's clean here. The air is sweet and pure. They blue sky is up there to see - not just to dream about. It's not blotted out by the smoke from hundreds of factory chimneys. The water is good. There are no epidemics here in the country. You may not make any money, but I guarantee you that you will live twice as long!"

"Joyce, you will die of boredom on the farm. The city may not be clean, but it has life. There are lights, good times, excitement. There are people - real people. We can talk, go out, have fun. I'm alive in the city, Joyce. I'm dead here!"

"Look at you, Susan. You tell me that you're having a good time! I feel sorry for you. You look as though you're just this side of the grave. Face it. That factory work is killing you! How many hours do you work a week: 72, 84, 104? When do you have time for all that fun you talk about? You have less time off than you had on the farm. Do you think we don't know what goes on in those factories? Do you think we don't know what happens to girls who work in the cities?"

"Stop preaching at me!" interrupted Susan.

"No, I won't," continued Joyce. Do they let you work at your own pace? Do they beat you if you slow down? Is there light and air? Whose fault is it if you get hurt on those dangerous machines? Don't try to tell me that there's excitement and pleasure in working in a filthy room - 100 girls squeezed into a space where 15 would be a crowd! What happens when you try to talk to another girl? And suppose they did let you talk. Could you hear anyone over the clatter of the machines?"

"Wait a minute," interrupted Joyce. Don't let your feelings about cities and factories run away with you. I never said that the factory was paradise. Sure it's hard work, and there are dangers. But we only work 60 hours a week. Life in the factory is much easier now. They hardly ever beat us. There's more light in the factory than you think. Anyway, we usually stop work when the sun goes down. Yes, some girls do get hurt, but don't accidents happen on the farm? I'll never get hurt if I am careful. Girls get hurt because they get careless. They forget to keep their eyes on the sharp blades and the rough edges. You have to be alert every second. And, don't forget, I get two free meals a day!"

"What do they give you to eat?" snorted Joyce. "Garbage, that's what - and not too much of that! How much time do you get to eat: 15 minutes? Every extra minute spent eating means less cloth made by your beautiful factory. The bosses aren't going to lose profits so that you can eat your food in peace and quiet. Free meals? You know as well as I do that those meals come out of your pay. If they don't, they come out of your hide!"

"You still miss the point," continued Susan, refusing to give in. "Things are getting better every day. Besides, I'm away from home. I can earn money and I can save some. I'm on my own. A woman with money finds it easier to get a husband. You should know that!"

"No, Susan, I don't know! What are you earning? Is it one penny or two pennies an hour? How much can you save from all of that? You are living in a world of make-believe. You'll never have any money. You get a husband? What will you look like in a few years? What man will have you with or without money?"

"Let's not talk about good looks," said Susan angrily. "I suppose that you're going to tell me that working on a farm makes a girl better looking!"

"Maybe not, Susan, but at least I won't choke to death. I'll always have plenty to eat. I can get a good night's sleep after being out in the fresh air all day. I may not meet too many people, but the ones I do meet will be honest and trustworthy. I know that I won't be robbed walking down some dark, crooked alley in a filthy city."

"You won't be robbed," said Susan, "because you won't be going anywhere. Someday you may learn that people really live in the city!"

Exercises

Technology Theme - Reading #5

Farm Or Factory

Tell which of the statements are true:

1. Under the domestic system, goods were made in factories.
   _____

2. No special skills were necessary to work in a factory.
   _____

3. Many factory workers lived in crowded, filthy homes.
   _____

4. Most of the factories were bright and airy. _____

5. Workers often stayed on the job until it was too dark to see the machines.
   _____

6. A large number of the workers in factories and mines were women and children.
   _____

7. Susan was not going to go back to work in the factory.
   _____

8. Susan said that she enjoyed her work in the factory.
   _____

Exercises

Technology Theme - Reading #5
Exercise #2

Farm Or Factory

Susan and Joyce have different ideas about many things. Decide who made or might have made the following remarks. Write S for each statement that Susan made or might have made and J for each statement that Joyce made or might have made.

1. I'm not going to stay here. There's too much work on the farm. _____
2. A woman with money can find a husband. _____
3. The air is pure and you can breathe here on the farm. _____
4. The city is full of excitement, fun, and lots of people. _____
5. They don't give you enough to eat at the factory. _____
6. You don't repeat the same job endlessly on the farm. _____
7. It's hard work, but we work only 60 hours a week in the factory. _____
8. You will live twice as long on the farm. _____
9. I never said the factory was paradise. _____
10. I won't be robbed walking down a dark street in a filthy city! _____

Exercises

Technology Theme - Reading #5
Exercise #3

Farm Or Factory

Pretend that you have just graduated from high school. You are offered a choice of jobs. You can work on a farm in the country or you can work in a factory in the city. Which would you choose? Why? What difference would you expect to find between Joyce's farm and your farm?

Exercises

Technology Theme - Reading #5
Exercise #4

Farm Or Factory

Imagine that you have the job of preparing a report card on the working conditions in Susan's factory. Grade each of the items below PASS or FAIL. Write a sentence explaining the reasons for each grade.

Wages or Pay	_____
Hours of Work	_____
Safety of Machinery	_____
Light and Air	_____
Space in the Factory	_____
Vacation and Holidays	_____
Living Quarters	_____
Labor by Women and Children	_____
Air Pollution	_____

1. _____
_____
2. _____
_____
3. _____
_____
4. _____
_____
5. _____
_____
6. _____
_____
7. _____
_____
8. _____
_____
9. _____
_____

Technology Theme - Reading #5
Exercise #5

Farm Or Factory

A newspaper reporter visited a typical factory in 1842, the year our story took place. Read his description and answer the questions that follow:

> There are 1500 people working in the factory. Most are under 15 years of age. Some, not yet seven years old, are barefoot. All start work at 5:30 A.M. They do not finish until after 7:00 P.M. The children are small for their age. They are weak looking, and many are crippled. They are beaten with a heavy strap by the foreman. This makes them work harder. They have never been to school.

Imagine that you are a health inspector. You visit the factory. Make a list of all the violations you find. Why do you suppose parents sent their children to work in factories like this one?

Power to the People

A. Vocabulary
   1. exploit

You may have thought that the Industrial Revolution would have given the people an even greater feeling of equality. There could have been wonderful opportunities for all people to share in the profits to be made in the new factories. Actually, just the opposite happened.

A new "nobility" now controlled the daily lives of the workers. These new "nobles" were factory owners and businessmen. They were interested only in how much money they could earn for themselves. They hired people to work under bad conditions for the lowest possible wages. Workers who could not or would not work in a 19th century factory were easily replaced. There was always a large supply of labor to replace the dropouts on the assembly lines.

Some workers were willing to labor under these brutal conditions. Others felt that they were being exploited (used) by the bosses. These workers could not accept their poverty and suffering. They had to do something to improve their lives. They felt that they too should enjoy some of the benefits of the Industrial Revolution.

Many different ideas were offered to give workers a larger share of the profits. In this story we see two English factory workers comparing their ideas and feelings about their boss (the capitalist), the factory, and their jobs. Ask yourself how you would have felt as a worker in their factory.

Why does Kevin feel that Conrad's ideas go too far? Do you agree? How might the factory owner have answered Conrad's suggestions for taking over the factory?

Technology Theme - Reading #6

Liverpool, 1870

"How can I explain my feeling about the capitalist system?" said Conrad. "I hate it."

"Never mind how you feel about it," interrupted Kevin. "What is it?"

"What is it?" "Where have you been hiding? It's the system you're living under. Rich people own and run the factories and businesses so that they get even richer! They use us. They exploit us! The rich get richer, the poor get poorer."

"Exploit - is that the only word you know?" asked Kevin. "Why don't you use simple words? Can't you understand that some people are meant to be rich? Poor people like us work for the rich. We are paid money for our work. What's so bad about that?"

"That's exactly my point, Kevin. Why should some people be rich? Why would greedy capitalist decide how much to pay us? They always pay us less than we're worth! Why must they use us? Why should they profit from the sweat of our broken backs and hands? Break out of your chains, Kevin. Throw them in the capitalists' faces!"

"The capitalists have the money and know how to use it," said Kevin, who refused to get excited. "They have the imagination and the nerve to try out new machines and make new products. You see, Conrad, I know who I am: I'm a worker. I'm poor. Perhaps someday I will earn more. Right now, I know that I don't have the money or the know-how to be a factory owner. I'm not for hire. The capitalist put me to work. He pays me. I can eat and my family can live.

What more could I want?" "How can you be satisfied with so little?" asked Conrad. "I tell you that you are being used by the capitalists. You come back and tell me that it's perfectly all right for you and me to be poor while others are rich. Do you mean to tell me that you don't want us to live as well as the capitalists? Aren't we as good as they are? Don't we eat and breathe and have feelings? Don't we bleed when we are injured? What's wrong with you, Kevin? Where are your feelings?"

"A man who is smarter than I am deserves to live better than I do," answered Kevin evenly. "No, I don't want to live like the rich. Yes, I am happy the way I am. I know that if I work harder I will earn more money. Let the capitalist get rich. I don't want what he has."

"And I tell you, Kevin," said Conrad, "I want all of the capitalist's money. I want all of his profits - not for myself alone, but for all of you workers. I want the true value of what I make with these hands! The money is mine! It is ours! The capitalists and their families deserve nothing! How can you be willing to work for whatever money they decide to pay you? Why should you let yourself be ground down by the capitalists' heels?"

"All right, Conrad, I admit I'm not completely satisfied. I never said I was. But I know what I can do, and I know what I can't do. I'm a worker, not a boss. Sure I want more money. Who doesn't? Yes, I want better working conditions. I wouldn't even mind fewer hours of work in a cleaner place. I'll even admit that I have a dream. Someday, if I can save enough money, I want to open my own shop. But can't I make you understand that I don't want to own or run the factory?"

"Fool! I never said that you would own the factory by yourself!" shouted Conrad, his face as red as a beet. "Can't you see that your work in the factory should give you a share of the profits? The factory is yours and it's mine. It should not belong to the capitalist. All of us who work in the factory should own it. The capitalists controls the factory because he's lucky. He happened to have had a little money with which to get started in business. The capitalist may believe it, but we know that God did not decide who would be the owner of the factory. It was just chance!"

How many times do I have to tell you that I don't want anything to do with owning his factory," said Kevin a little angrily. "The owner worked hard to set it up. He put his money, his brains, his sweat into it. He built it from nothing into a giant. Doesn't he deserve the fruits of his work?"

"He deserves nothing!" said Conrad with great feeling. "We'll take it from him! Soon it will all be ours! The day of the capitalist is over! Power to the workers!"

"And who will run the factory without him?" asked Kevin.

"We'll run it together," answered Conrad. "We'll choose our own leaders. They'll run it for us. We'll share in the profits. Don't worry. We know as much as your capitalist pet!"

"And who will make sure that our leaders will do a better job than the capitalist? Who will make sure that they are honest? How will we know if we are getting our fair share? No, Conrad, I don't trust your leaders any more than I trust the capitalist. But I know what the capitalist can do. I know that I can work for him. I'm not sure I want to be bossed around by men who used to work alongside me.

Their hands will become soft, and they'll never want to go back to real work. You and your friends dream of running factories. Do you really care about making things?"

"You must have a little more faith in me, Kevin, my friend," said Conrad in a low, intense voice. "A new day is coming for the worker. We will take over! The profits belong to the worker!"

"I wonder," said Kevin quietly, "if you want to take over the factories or the world?"

Exercise A

Technology Theme - Reading #6

Power To The People

Tell which item makes each statement correct.

1. The new "nobles" of the Industrial Revolution were the (a) workers; (b) factory owners; (c) members of Parliament.

2. Conrad said that (a) the rich got rich on the labor of the poor; (b) workers should not run the factories; (c) everyone should be very poor.

3. Kevin understood that he was always going to be (a) a rich man; (b) a worker without much money; (c) foreman.

4. "Break out of your chains" was a remark made by (a) the factory owner; (b) Kevin; (c) Conrad

5. Kevin knew that if he worked harder, he would (a) be a factory owner; (b) marry a rich woman; (c) earn more money.

6. Conrad felt that the factory owner's money should be given to (a) the workers; (b) the government of England; (c) anyone who asked for it.

7. Kevin's dream of success was to (a) open his own factory; (b) stop working; (c) open his own shop.

8. Conrad believed in (a) more income for the capitalist; (b) more income for the workers; (c) more income for the farmers.

Exercise B

Technology Theme - Reading #6

Write T for each statement that is true, F for each statement that is false, and N for each statement that is not mentioned.

1. Factory owners hired workers at the lowest possible pay.

_____

2. Nineteenth-century factory workers were the best the world has ever seen.

_____

3. In the 19th century it was hard to replace factory workers who left their jobs.

_____

4. All workers in the 19th century were happy with their jobs.

_____

5. Some workers felt that their bosses were taking advantage of them.

_____

6. Con ad said that all workers should share in the profits of their work.

_____

7. The capitalist system offers the best way to run the factories of the country.

_____

8. Conrad was against the capitalist system.

_____

9. Kevin felt that all workers should be paid exactly the same amount of money.

_____

Exercise C

Technology Theme - Reading #6

Use each of the following key terms in a sentence:

1. exploit: _____

_____

_____

2. boss: _____

_____

_____

3. capitalism: _____

_____

_____

4. capital: _____

_____

_____

5. profit: _____

_____

_____

6. wages: _____

_____

_____

The Assembly Line Today

A. Vocabulary
1. bargained
2. boycott
3. routine
4. schedule
5. senority
6. exchange

Through the years, working conditions in factories were much improved. It became legal for workers to organize into labor unions. Workers learned to act together. They bargained with the bosses as a union or group. When necessary, they stopped work and went on strike. They encouraged people to boycott (stop buying) the product. They used the power of their votes to get favorable laws passed.

But many workers were still not happy to be working in a factory. While the pay and hours were often good, the workers were tired of doing the same thing hundreds or even thousands of times each day. They grew bored. They did not have a feeling that they were really making something. Their part of the production process was too small to mean anything to them.

Some workers found that they were uncomfortable with so many people in the same room. Others did not like to obey rules made by someone else. The hours and conditions of work were decided for them. They could not be late, and they had to work a fixed number of hours.

In this story two English workers are talking about their factory. Ask yourself why one worker is so strongly against this type of work. What are his objectives to working in this factory? Why is the other worker not unhappy about working in the same factory?

Birmingham, 1970

"How do you like working at Acme Motors, Ed?" asked Joe.

"I don't know how to answer, Joe. I'm mixed up about it." replied Ed. "The money isn't bad - though I could use more."

"Who couldn't?"

"But I don't know if I'll ever get used to this routine," added Ed.

"But Ed, everyone has a routine or a schedule of work," replied Joe. "It doesn't matter whether you work on a farm, in a store, or here. You've got to know what you're doing and when you're going to do it."

"Yes, Joe, but the factory is different. I have to be here at the same time every day. I could use a little more sleep. I have to keep doing the same things each day. Why should I hurry up to be here? It's the same stuff day after day. And you know what happens when you're late a few times!"

"Work starts at eight," said Joe. "And everyone has to start at the same time. Otherwise the factory couldn't operate."

"Wait, there's more, Joe. Why do I have to work as late as everyone else? Some days I'm just too tired to put in a full day. Here I am, tired as a dog, dragging myself along! Why do I have to punish my body this way?"

"Suppose the boss let you off an hour or two early," answered Joe. "Can you see what would happen? Dozens of others would ask for the same deal. And what would happen to the assembly line? There could be a breakdown without enough workers!"

"Who in blazes cares what happens to their stupid assembly line? Let it break down!"

"If it breaks down and the factory stops, there goes your job and mine along with it!"

"Okay, Joe, okay. Why did you ask me how I felt about working here? You don't care. You just like to hear yourself talk."

"Oh cool off, Ed. You're just tired. After another month or two your hours will fly by."

"You can say what you want, but it's still a drag to me," said Ed.

Joe didn't seem to hear Ed's last remark. "The pay is good here. It's the top wage in the industry. Our union has done a terrific job! We're working a six-hour day with time and a half for overtime. You've got morning and afternoon breaks.

"You've got nine paid holidays, and you even get your birthday off! And don't forget your two-week vacation with pay!"

"Great," said Ed with disgust. "You forgot the wage tie-in with the cost of living."

"Right, Ed. Why can't you be serious? Why do you pass it all over? I suppose you'd be thrilled to work 18 hours a day for a few cents!"

"Tell me more," laughed Ed.

"Okay. Imagine that you're living in the bad old days," said Ed seriously, "You can't keep body and soul together. You and your family are starving. One fine day, you open your mouth to complain to your foreman. "Get out!" he says. "Pick up your pay. You're through!"

"Come on, Joe. With or without the union, we're all dead in this factory anyway."

"You still don't see it," continued Joe. "Okay, complain today. Can anyone fire you without good cause? Do a good job, keep your nose clean, and you've got no problems."

"Haven't you forgotten one thing?" asked Ed.

"What's that?"

"Senority, Joe. There's always the union and senority. Say they don't sell enough cars. Some of us have to go. It's last hired, first fired! It's my head that will roll first around here!"

"This is a factory, Ed. There are over a thousand of us working under one roof. The supervisors divide the work. Each of us has one thing to do each day. This way we become specialists. We know exactly what we're doing. We make fewer mistakes."

"But who wants to be a specialist in turning a screw or tightening a bolt?" asked Ed. "We've got a strong union. Let's make a few changes around here. Call a meeting of all the men and women in our group. We'll divide up the work. Each of us will do a job he or she wants to do. We'll exchange jobs as often as we think it will help us. We'll all be happier and healthier. We'll produce more. We'll make very few mistakes! We'll turn out better cars!"

"Impossible!" cried Joe. "They'd never let us do it! Talk about this to the others, and we'll all get fired! Count me out!"

"I thought you were a man, a friend. Now I know that I couldn't trust you to bring me the right time!"

"You're upset, Ed. You'll feel better in the morning."

"These pains in my head and stomach aren't going to go away by morning! I can't stand this grind. I can't stand some of the people I work with. And I'm not sure I can stand talking to you!"

"Ed, you've made your point. Maybe the union can do something for you. I'll bring your suggestion to the union. Change may be what we need in this factory. Give them a chance. Let them try to work something out with the owners. Don't quit now!"

"All right, Joe, I'll try to stay. Unions and bosses are learning that workers are people. We are individuals. We're not all the same."

Questions

The Assembly Line Today

Write T for each statement that is true and F for each statement that is false.

1. Some workers were uncomfortable because of overcrowding in the factory.

   _____

2. Joe thought that Ed would get used to the work in the factory.

   _____

3. Ed enjoyed going to work at the same time each day.

   _____

4. Joe felt that every worker on the assembly line should work the same number of hours.

   _____

5. Ed was tired of doing the same things over and over.

   _____

6. A specialist keeps working at the same job, or part of a job.

   _____

7. Specialist make many more mistakes in their work than people who do not specialize.

   _____

8. Ed wanted to enjoy his work.

   _____

Questions

The Assembly Line Today

Complete each of the sentences below:

1. Many persons were unhappy about working in a _____

2. Every worker must have a _____ of _____

3. They encouraged people to stop buying their _____

4. "Our union has done a terrific job to help the _____"

5. "How can you do the same thing hour after _____?"

6. "All I ever do is _____ bolts."

7. "I make a small part of the _____ car."

8. "Senority means that the _____ hired is the _____ fired."